

1.-33. (Canceled)

34. (Currently Amended) A method of treating dielectric film on a substrate, the method comprising:

(a) exposing the dielectric film to ultraviolet radiation with a first light intensity during a first time increment;

(b) exposing the dielectric film to ultraviolet radiation with a second light intensity during a second time increment, wherein the first and second light intensities are different; and

(c) repeating (a) and (b) at least twice in a manner that provides modulated ultraviolet radiation exposure that significantly increases the hardness and modulus of the dielectric film.

35. (Original) A method of claim 34, wherein the dielectric film is a carbon-doped oxide (CDO) film.

36. (Canceled)

37. (Original) A method of claim 35, wherein the carbon-doped oxide (CDO) film is a porous film.

38. (Canceled)

39. (Original) A method of claim 37, wherein the hardness of the porous dielectric film is increased by about 0.9 GPa or greater.

40. (Canceled)

41. (Original) A method of claim 37, wherein the modulus of the porous dielectric film is increased by about 5.0 GPa or greater.

42. (Canceled)

43. (Original) The method of claim 37, wherein the porous dielectric film shrinks by no more than about 25 % and more preferably by no more than about 15% during the method.

44. (Canceled)

45. (Original) A method of claim 37, wherein the dielectric constant of the porous dielectric film increases by no greater than about 8% during the method and more preferably by no greater than 4%.

46. (Original) A method of claim 34, wherein the first and second light intensities differ by a value up to about 3 W/cm².

47. (Original) A method of claim 34, wherein one of the first and second light intensities is about 0 W/cm².

48. (Original) A method of claim 34, wherein the ultraviolet radiation in (a), (b) and (c) is provided by a single ultraviolet radiation source.

49. (Original) A method of claim 34, wherein the ultraviolet radiation is provided by one or more sources modulated to provide modulated ultraviolet radiation.

50. (Original) A method of claim 49, wherein of the modulated ultraviolet radiation has a duty cycle ranging between about 1% and about 90%.

51. (Original) A method of claim 49, wherein the modulated ultraviolet radiation has a period of between about 1 μ seconds and 5 minutes.

52. (Original) A method of claim 34, wherein the substrate exposure to ultraviolet radiation in (a), (b) and (c) occurs for a total time ranging between about 1 second and about 60 minutes.

53. (Original) A method of claim 34, wherein the ultraviolet radiation in (a), (b) and (c) comprises one or more wavelengths ranging between about 150nm and about 800nm.

54. (Canceled)

55. (Original) A method of claim 34, wherein (a), (b) and (c) are performed at pressures ranging between about 1 μ Torr and about 760 Torr (atmospheric pressure).

56. (Original) A method of claim 34, wherein a purge procedure is performed after (a) and before (b), after (b) and before (c), the purge procedure involving the use of one or more of Ar, He, N₂, CO₂, H₂, O₂, and C₂H₄.

57. (Original) A method of claim 34, wherein (a), (b) and (c) occur at a constant substrate temperature between about -10 and about 450 degrees.

58. (New) A method of treating dielectric film on a substrate, the method comprising:

(a) exposing the dielectric film to ultraviolet radiation with a first light intensity during a first time increment;

(b) exposing the dielectric film to ultraviolet radiation with a second light intensity during a second time increment, wherein the first and second light intensities are different and not zero; and

(c) repeating (a) and (b) in a manner that provides modulated ultraviolet radiation exposure that significantly increases the hardness and modulus of the dielectric film.

59. (New) The method of claim 58, wherein the first light intensity varies each time (a) is repeated.

60. (New) The method of claim 59, wherein the first light intensity varies randomly.

61. (New) The method of claim 59, wherein the first light intensity decreases each time (a) is repeated.

62. (New) The method of claim 59, wherein the second light intensity varies each time (b) is repeated.

63. (New) The method of claim 58, wherein the dielectric film is a non-porous film.

63. (New) The method of claim 58, wherein the dielectric film is a carbon-doped oxide (CDO) film.

65. (New) The method of claim 63, wherein the carbon-doped oxide (CDO) film is a porous film.

66. (New) The method of claim 58, wherein the first and second light intensities differ by a value up to about 3 W/cm².

67. (New) The method of claim 58, wherein the substrate exposure to ultraviolet radiation in (a), (b) and (c) occurs for a total time ranging between about 1 second and about 60 minutes.

68. (New) The method of claim 58, wherein the ultraviolet radiation in (a), (b) and (c) comprises one or more wavelengths ranging between about 150nm and about 800nm.

69. (New) The method of claim 58, wherein (a), (b) and (c) are performed at pressures ranging between about 1 μ Torr and about 760 Torr (atmospheric pressure).

70. (New) The method of claim 58, wherein a purge procedure is performed after (a) and before (b), after (b) and before (c), the purge procedure involving the use of one or more of Ar, He, N₂, CO₂, H₂, O₂, and C₂H₄.

71. (New) The method of claim 58, wherein (a), (b) and (c) occur at a constant substrate temperature between about 20 and about 450 degrees Celsius.